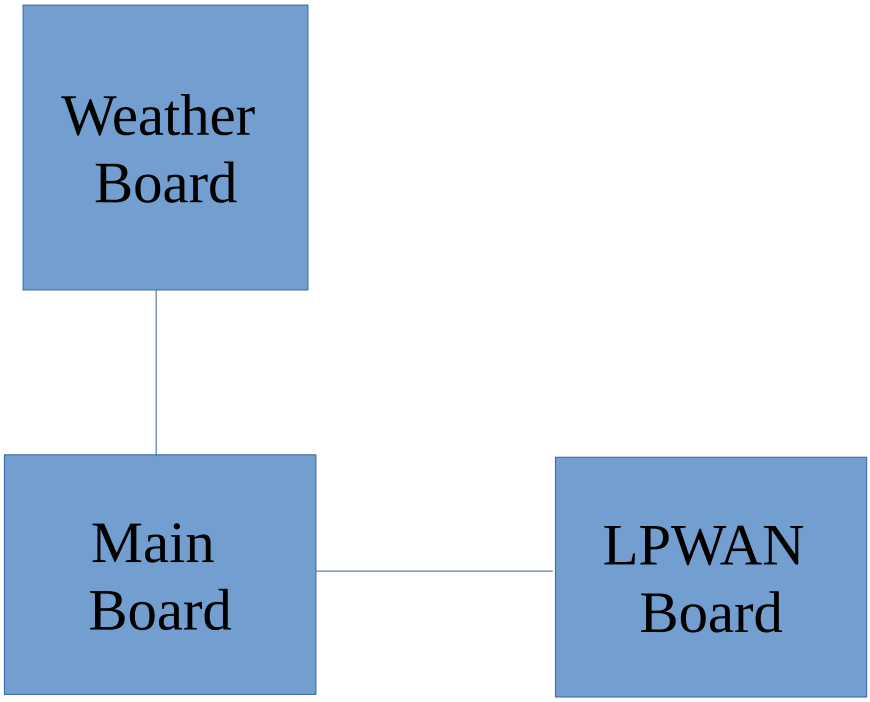
System Diagram



Weather Board <=> Main Board
1.Tx/Rx
2.I2C(SDA/SCL)
3.Sensor Data
    a.Analogx3 (BH1603/BPW21/Wind Direction)
    b.H/W INT(Wind Speed/Rain)
4.Power (3.3VProvide by LDO/GND)

Main Board <=>LPWAN Board
1.Tx/Rx
2.Power (3.3V Provide by LDO/GND)

Main Board

1.元件一覽表

Function	ID	Vender	GPIO	Spec
RTC	DS1337	maxim	I2C	link

2.Pin Define

System	Arduino Pro Mini (A-8/D-14)	Arduino M0 (A-6/D-14)	MT7688 (A-6/D-18)
System			
Tx	D1	D1	D1
Rx	D0	D0	D0
SDA	A4	SDA	D2
SCL	A5	SCL	D3
SPI(SS)	D10	D10	-
SPI(MOSI)	D11	D11	-
SPI(MISO)	D12	D12	-
SCK	D13	D13	-
Power Management			
Solar panel Voltage (Analog)	A0	A0	A0
Battery Voltage (Analog)	A1	A1	A1
LDO Control (Digital) Power supply to Weather board	D4	D4	D4
Communication (connect to LoRa/SigFox Module)			
Tx	D6	D6	D8
Rx	D7	D7	D9
Get Sensor Data(From Weather board)			
BH1603(Analog)	A2	A2	A2

BPW21(Analog)	A3	A3	A3
風速(HW INT)	D2	D2	D10
風向(Analog)	A6	A4	A4
雨量(HW INT)	D3	D3	D11

3.Reference Design(Solar panel charger)
https://github.com/ReiniervdL/Vinduino/blob/master/Vinduino-R3/VDO_R3%20SCH.pdf

4.Others

-測試點電源(量測系統電力消耗)

1.太陽能板正極

2.電池正極

3.系統輸入(兩個測試點,用零歐姆電阻串接,測試時斷開,使用INA219 量測電壓與電流.)

-洞洞板留一個 5x7mm,pitch 2.54 的洞洞板空間.

-MicroUSB 直接對系統供應電源

Weather Board

1.元件一覽表

M0 Pin define

光強度	BH1603	ROHM	Analog	link	PB08
太陽輻射	BPW21	OSRAM	Analog	link	PB09
大氣溫濕度	SHT31	SENSIRION	I2C	link	PA22(SDA)/ PA23(SCL)
大氣氣壓	BMP180	BOSCH	I2C	link	PA22(SDA)/ PA23(SCL)
風速	-	ARGENT	HW INT	link	PA08
風向	-	ARGENT	Analog		PA05
雨量	-	ARGENT	HW INT		PA09

2.MCU

ATSAMD21G18, 48pins LQFP (Arduino M0)

3.On Board Jack

描述	Note
VCC(3.3v)	
GND	
I2C-SDA	
I2C-SCL	
Tx	
RX	

Analog data - BPW21	
Analog data - BH1603	
HW INT - 風速	
Analog data - 風向	
HW INT - 雨量	
MicroUSB(provide 5v Power)	

4.Others

-PCB 版能否做成圓形,並且設計成可以兩面上元件,跟日照(光強度與光輻射)有關的在一面,其他在另外一面.